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February 6, 2004

Dirk Roggeveen  
Administrator  
Nantucket Conservation Commission  
Town Building Annex  
37 Washington Street  
Nantucket, MA 02554

RE: Response to Itemized Nantucket Town Comments Provided by Ms. Tracy Curley  
Submitted on January 9, 2004.

Dear Dirk:

We have reviewed the response to the Great Harbor Yacht Club Notice of Intent (NOI) submitted to the Nantucket Conservation Commission by Tracy Curley, Nantucket Town Biologist. The following comments and concerns are based on this submission dated January 9, 2004.

Comment #1 Sediment Concerns Related to Proposed Dredging

Three composited stations out of five showed evidence of Arsenic (As), Mercury (Hg) and Lead (Pb) and all five of the composited stations showed evidence of Zinc (Zn) near the boatyard from composited samples taken by Sullivan Engineering. The Town of Nantucket submitted their results to ENSR and Sullivan Engineering from their lab's chemistry analysis, and these results detected the same metals at minute reporting values. The lab that was used for the Town of Nantucket's analysis did not set their detection limits low enough to determine the exact levels of mercury and arsenic. Sullivan Engineering's lab set their detection limits low enough to screen for the smallest fraction of these metals that could be detected and therefore reported more accurate results when the two analyses are compared. Sullivan Engineering adopted the federally and state approved method of compositing samples in order to acquire a conservative estimate of heavy metals that might be found in the sediment. By compositing samples, this tends to concentrate contaminants and results tend to be higher than what might actually be found when only individual sites are examined. The Town of Nantucket took individual measurements and therefore their results do show lower values of metals (that their lab could detect, accurately).

The results from these lab analyses were compared to standard marine ER-L (acute) and ER-M (chronic) threshold screening values (Long et al., 1993) that are commonly used to determine if potential risks are involved with dredging and disposing of marine and estuarine sediment. These threshold screening values are commonly used by the US Army Corps, US



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EPA, and other regulatory agencies to make decisions regarding the level of risk that the sediment may pose to marine communities during dredging and disposal. The data in Table 1 compares the results from the Sullivan Engineering's sediment analysis taken at stations located near the boatyard for the proposed Great Harbor Yacht Club project to the ER-L and ER-M thresholds. The comparison shows that the detection levels for Arsenic, Mercury, Zinc, and Lead that were detected near the boatyard are at levels far below the thresholds for posing any potential risk to marine organisms. Ms. Stephanie Kelly on December 17 and 19, 2003 clarified the location of the sediment samples during a discussion with Ms. Tracy Curley.

Most marine contaminants, including metals, physically bind to the smallest grain size fractions (silt and clay). Of the nine grain size samples taken by ENSR, including those located near the boatyard, and the five composited samples taken by Sullivan Engineering, none had silt or clay fractions greater than 35%. This suggests that there is very little silt and clay available for binding of contaminants and thus supports the findings of low detection levels of Arsenic, Mercury, Zinc, and Lead. For example, the analysis of the grain size samples taken by ENSR showed that the sediment around the boatyard is predominantly comprised of sand and gravel (greater than 95% at stations NAN-1, NAN-2, NAN-3, NAN-4, NAN-5, and NAN-9). Station NAN-6 had 87% sand and gravel. This supports the hypothesis that the area near the boatyard is comprised of clean sand. Stations NAN-7 and NAN-8 had approximately 70% sand and gravel with approximately 30% silt and clay. These stations were located within the channel leading to the boatyard. The channel is the deepest marine portion of this project and logically acts as a trough where finer particles can settle. However, because the amount of silt and clay near the boatyard was measured in small amounts, sediment contamination and transport issues will be negligible.

As stated by Ms. Curley, eelgrass (*Zostera marina*) prefers a sandy habitat and that it is an important habitat defined as essential for various fish and shellfish species ENSR found patchy eelgrass growth throughout the survey area and the results are provided within the NOI. At a meeting on January 30, 2004, it was stated by the town that winter flounder, a species of concern, exists both within eelgrass and on sandy areas. The proposed project will not change the sediment consistency at the site and the habitat of sandy patches for fish and shellfish will remain the same. As the project stands to this date, some small patches of eelgrass may be removed but the Great Harbor Yacht Club client is prepared to propose mitigation in twice the amount impacted to ensure no loss of eelgrass habitat.



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ENSR surveyed a total of 1251 quadrats for eelgrass percent cover along a series of sampling transects set at 10-foot intervals. Both the Town and ENSR found that within the existing channel there is little to no eelgrass growth and therefore deepening this channel area will not have a significant adverse impacts to the eelgrass habitat found in this area. ENSR reported areas with >70% cover adjacent to the channel where the floating piers may be placed. Monitoring during construction is proposed by ENSR to be certain that impacts to the marine environment adjacent to the current boatyard do not exceed any predetermined threshold that would indicate potential impact. Both the scientists working for the Great Harbor Yacht Club and the Town of Nantucket should determine the construction and post-construction monitoring plans. At a meeting on January 30, 2004 the Town of Nantucket suggested that ENSR follow up on eelgrass percent cover assessment at locations beyond the proposed south pier where potential dredging is proposed and suggested that benthic samples be taken to assess infaunal biodiversity. The Town and ENSR agreed to develop a sampling plan, together, and the Town has offered a boat with an A-frame to facilitate this work.

ENSR acknowledges Ms. Curley's comments that eelgrass mitigation can be difficult to establish. In order to be certain that mitigation will be successful, monitoring of donor and receiving sites is proposed. ENSR proposes that the details of this monitoring be discussed with the Town of Nantucket as well as with eelgrass mitigation experts such as Dr. Fred Short. Dr. Fred Short (University of New Hampshire) has advised ENSR, in the past, that it is necessary to mitigate twice the potentially impacted area in order to obtain successful eelgrass restoration. It is a primary goal of this project to make sure there is no net loss of eelgrass habitat in Nantucket Harbor due to the proposed work. This primary goal can be achieved through careful construction planning, monitoring, and mitigation.

Ms. Curly stated in her letter to the Conservation Commission that all samples had high organics. The results from Sullivan Engineering's testing and from ENSR's grain size analysis suggest that total organic carbon is low at all stations. Total organic carbon (TOC), often associated with high bacterial growth and thus reduced rates of oxygen in the sediment and water column ranged between 0.05-1.4% at sites sampled adjacent to the boatyard. High percentages of TOC have a direct relationship with percentages of silt and clay. The area around the boatyard was comprised of mostly sand and gravel and therefore the TOC values found were also considerably low. For example, areas in western Long Island Sound where the percentage of silt and clay particles range from 70-95% have what is considered by state and federal standards of having high TOC values that range between 4-6%.

Table 1

Metals	ER-L ppm	ER-M ppm	Reported GHYC field results
As	8.2	70	1.5-4.8 ppm detected at 3 of 5 composite stations.
Hg	0.15	0.71	0.08 and 0.14 ppm detected at 2 of 5 composited stations.
Pb	46.7	200	22 and 27 ppm found at 2 of 5 composited stations.
Zn	150	410	59-78 ppm, detected at all 5 composited stations. TOC ranged from 0.05-1.4%

Elutriate testing is possible if bioaccumulation is a concern, despite the fact that the level of contamination at this proposed site is minute. This elutriate testing can determine the exact amounts of metals that would be available for bioaccumulation by marine organisms. Elutriate testing is commonly used to determine if dredged material is suitable for open ocean disposal. Thresholds have been set for this testing method and if the results are lower than the thresholds then risk to the environment is considered non-existent.

Ms. Curley states that daily monitoring and active onsite supervision by qualified personnel shall be undertaken if the Great Harbor Yacht Club plans proceed. This is entirely possible and should be discussed. It is the intent of GHYC that utilization of best available technology be employed to avoid impact to the marine environment.

#### Comment #2 Eelgrass Impact Concerns

It is important to this project that Ms. Curley defines her use of the term "the Site" in reference to her comment that this project will destroy all eelgrass. ENSR believes that based on the results of their intensive eelgrass performed by ENSR this statement is incorrect.

Ms. Curley mentions that boating activity could resuspend nutrients within the sediment. This area has been a boatyard for more than 75 years. The purpose of the area will remain the same. It is also important to note that the Town did not measure nutrients in the proposed project area; this statement is speculative until actual measurements can be made.

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Since very little organic matter was found at the site it is likely that the amount of nutrients available for possible resuspension are minimal. Selective dredging within the channel coupled with monitoring will prevent and minimize potential impacts to eelgrass habitat and will further reduce the risk of sediment transport, that is predicted by the Town, to be caused by project construction. Based on the scientific results from samples taken by Sullivan Engineering and ENSR, the area is comprised of sand and gravel (large grain size particles) with very little silt and clay (small grain size particles). These large grain size particles have a high settling velocity rate and do not remain in suspension for great lengths of time. These large particles settle to the bottom rapidly and will not create sediment transport issues.

#### Comment #3 Shellfish

Construction of the proposed project will not increase the level of contaminants into the marine system. The minute inventory that is present remains the same with or without construction. The low levels of metals detected in samples taken by the Town and Sullivan Engineering, for example, are predicted to remain sediment bound based on grain size analysis. Further analysis can be done in the form of elutriate testing to determine exact amounts that may be available for bioaccumulation.

#### Comment #4 Water Quality

Discussion of relocation of the fuel service station is possible and shall be explored. The biggest contributor to increased nutrients to a marine system from freshwater runoff is from the application of fertilizers. Increased nutrients are not likely to be a problem at the proposed project site as the use of nutrient laden fertilizer is not necessary. Concerns regarding the resuspension of contaminants are addressed in Comment #1 of this document.

#### Comment #5 Circulation Impacts

Proposed project will not have a significant adverse impact on the circulation of water within Nantucket Harbor. See Sullivan Engineering's letter submission.

#### Comment #6 Finfish Impacts

Juvenile winter flounder were not observed during the Town of Nantucket's survey and ENSR found only a few winter flounders in the survey area during our field investigation. ENSR recognizes that eelgrass can provide habitat for juveniles of this species. The proposed project area experiences high boating activity in the summer, already. Buoys are

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present in the summer for local people and summer residents to moor their boats, currently. In the winter, when juvenile winter flounder are most likely to be found, the level of boating activity is significantly reduced. Boating activity in the winter will remain minimal thus allowing juvenile winter flounder opportunities to settle.

#### Comment #7 Lighting Impacts

Light fixtures will be outfitted with directional shades to limit the light footprint to the pier and slips. See Sullivan Engineering's letter submission for further detail.

#### Comment #8 Conservation Commission Wetland Protection Regulations

Concerning the performance standards/regulations under the Town of Nantucket Conservation Commission Wetlands Protection Regulations, we offer the following comments.

##### 2.01 Land Under the Ocean

Project proponent shall employ best available measures as determined by the Conservation Commission to minimize adverse effects resulting from the construction of the pier and floats.

##### 2.02 Coastal Beaches (and Tidal Flats)

Project proponent proposes to construct the pier and floats in accordance with procedures requested by the Conservation Commission to reduce the amount of habitat alteration wherever possible.

##### 2.06 Salt Marsh

Project proponent does not propose to fill or alter salt marsh habitat.

##### 2.07 Land Containing Shellfish

Project proponent does not propose to obstruct the ability of the public to gather shellfish recreationally or the ability of commercial fishermen to harvest shellfish. Area is presently closed to the harvesting of shellfish.



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2.08 Anadromous/Catadromous Fish Runs, Banks Along Fish Runs, and Lands Under Fish Runs.

Project proponent does not propose to use procedures that are detrimental to spawning or nursery habitat for anadromous/catadromous fish species.

2.10 Land Subject to Coastal Storm Flowage

Project proponent believes that the work proposed does not reduce the ability of the land to absorb and contain floodwaters, or to buffer inland areas from flooding and wave damage. Additional response to this question has been addressed by the project engineer, Cullinan Engineering.

Sincerely,

ENSR

A handwritten signature in cursive script that reads "Dr. Pamela Neubert".

Dr. Pamela Neubert  
Senior Marine Ecologist

A handwritten signature in cursive script that reads "Donald G. Schall".

Mr. Donald G. Schall  
Senior Biologist

References Cited:

Long, E.R., D.D. MacDonald, S.L. Smith and F.D. Calder. 1995. Incidence of adverse biological effects within ranges of chemical concentrations in marine and estuarine sediments. *Environmental Management* 19:81-97.

